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Characterisation of an Exploding Foil Initiator (EFI) system H.R. DAVIES, D.J. CHAPMAN, Fracture and Shock Physics, SMF Group, Cavendish Laboratory, JJ Thomson Ave., Cambridge, CB3 0HE, T.A. VINE, QinetiQ Ltd., Fort Halstead, Sevenoaks, Kent, TN14 7BP, UK, W.G. PROUD, Fracture and Shock Physics, SMF Group, Cavendish Laboratory, JJ Thomson Ave., Cambridge, CB3 0HE — Exploding Foil Initiators (EFIs) provide a safe and reliable means of detonation of explosives. They are highly insensitive to mechanical shock and electrical interference, requiring a specific high current pulse for initiation. The use of only insensitive secondary explosives and not more sensitive primary explosives further improves safety. When a high current is passed through the metal bridge, a plasma is formed as the metal can not expand beyond the polymer film layer above. This causes the film to expand forming a bubble or shearing off to form a flyer. These flyers can then be used to initiate secondary explosives. Due to the very high speed at which these systems operate, high speed streak photography was used to characterise the behaviour of the polymer film flyers produced. This paper will report the preliminary findings on the mechanical, electrical and velocity changes seen in some proprietary systems.

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